UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/815,172	03/31/2004	Raju Hormis	884.B72US1	7129

21186 7590 02/06/2008

SCHWEGMAN, LUNDBERG & WOESSNER, P.A.
P.O. BOX 2938
MINNEAPOLIS, MN 55402

EXAMINER	
HOLDER, ANNER N	

ART UNIT	PAPER NUMBER
2621	

MAIL DATE	DELIVERY MODE
02/06/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/815,172	HORMIS ET AL.	
	Examiner	Art Unit	
	Anner Holder	2621	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-29* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-29* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *19 August 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 101

1. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

2. Claims 14-21 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. The claim language does not comply with the requirements of MPEP 2106.01 I and is directed to non-statutory subject matter as follows. Claims 14-21 define a machine-readable medium that provides instructions embodying functional descriptive material. However, the claim does not define a computer-readable medium or computer-readable memory and is thus non-statutory for that reason (i.e., "When functional descriptive material is recorded on some computer-readable medium it becomes structurally and functionally interrelated to the medium and will be statutory in most cases since use of technology permits the function of the descriptive material to be realized" - MPEP 2106.01 I). The scope of the presently claimed invention encompasses products that are not necessarily computer readable, and thus NOT able to impart any functionality of the recited program.

Note:

A "signal" (or equivalent) embodying functional descriptive material is neither a process nor a product (i.e., a tangible "thing") and therefore does not fall within one of the four statutory classes of § 101. Rather, "signal" is a form of energy, in the absence of any physical structure or tangible material.

Should the full scope of the claim as properly read in light of the disclosure encompass

non-statutory subject matter such as a "signal", the claim as a whole would be non-statutory.

The examiner suggests amending the claim(s) to embody the computer program on "computer-readable medium" and deleting in the specification all sections defining or equivalent, the computer readable medium as a "signal", "carrier wave", "transmission medium", or "paper" which are deemed non-statutory (refer to "note" Above). Any amendment to the claim should be commensurate with its corresponding disclosure.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

4. Claims 4-6 and 22-26 are rejected under 35 U.S.C. 102(a) as being anticipated by Simsic et al. (Simsic) US 6,269,484 B1.

5. As to claim 4, Simsic teaches deinterlacing a frame of video with a motion compensation vector that is derived from a decode operation of the frame of the video. [Fig. 6; Col. 8 lines 35-58]

6. As to claim 5, Simsic teaches decoding at least one of a number of blocks in a frame of video based on the motion compensation vector prior to the deinterlacing of the frame of video. [Figs. 2-3; Col. 5 lines 12-28; Col. 5 line 61 - Col. 6 line 8]

7. As to claim 6, Simsic teaches displaying the frame of video on a progressive screen display. [Figs. 1-4; Abstract; Col. 4 lines 52-59; Col. 5 lines 12-28]

8. As to claim 22, Simsic teaches a module to decode a compressed video stream to generate at least one decode parameter and to deinterlace the decoded video stream based on the at least one decode parameter extracted from the compressed video stream. [Abstract; Figs. 1-5; Col. 4 lines 20-51; Col. 5 lines 12-29; Col. 6 lines 56-65; Col. 7 lines 29-49]

9. As to claim 23, Simsic teaches a video display to display the deinterlaced decoded video stream. [Figs. 1-4; Abstract; Col. 4 lines 52-59; Col. 5 lines 12-28]

10. As to claim 24, Simsic teaches the video display is a progressive scan video display. [Figs. 1-4; Abstract; Col. 4 lines 52-59; Col. 5 lines 12-28]

11. As to claim 25, Simsic teaches the at least one decode parameter includes a motion compensation vector. [Abstract; Figs. 1-5; Col. 4 lines 20-51; Col. 5 lines 12-29; Col. 6 lines 56-65; Col. 7 lines 29-49]

Claim Rejections - 35 USC § 103

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

13. Claims 1, 18, and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Simsic et al. (Simsic) US 6,269,484 B1 in view of Barrau US 6,968,007 B2.

14. As to claim 1, teaches receiving a compressed video stream; [Abstract; Fig. 1; Fig. 2; Fig. 4-7; Col. 4 Lines 20-29; Col. 5 Lines 15-18; Col. 6 lines 43; Col. 7 lines 33-35; Col 8 line 35-38] decoding a number of blocks of the compressed video stream to output a number of

blocks of decoded video data, wherein the decoding is based on at least one motion compensation vector; [Abstract; Figs. 1-7; Fig. 9; Col 4 lines 29-37; Col. 5 lines 18-28; Col. 6 lines 1-20; Col. 6 line 56 - Col. 7 line 21; Col. 7 lines 37-49] and deinterlacing at least some of the number of blocks of the decoded video data to output deinterlaced video data, wherein the deinterlacing of one of the blocks of the number of blocks is based on the at least one motion compensation vector. [Abstract; Figs. 1-7; Col. 4 lines 29-50]

Simsic does not specifically teach a prediction error energy being compared to a threshold.

Barrau teaches prediction error energy compared to a threshold. [Abstract; Fig. 2; Col. 7 lines 25-44; Col. 8 lines 36-41; Col. 9 Lines 30-40; it would have been obvious to one skilled in the art the switch could be applied in a different configuration for modifying coding of video]

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the prediction error energy comparison to threshold teachings into the device of Simsic improving coding video quality.

15. As to claim 18, see discussion of claim 1 above.

16. As to claim 19, see discussion of claim 1 above

17. Claims 2 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Simsic et al. (Simsic) US 6,269,484 B1 in view of Barrau US 6,968,007 B2 further in view of Johnson et al. (Johnson), Frequency Scalable Video Coding Using MDCT, IEEE, Pgs. V-477-V480, 1994.

18. As to claim 2, Simsic (modified by Barrau) teaches the limitations of claim 1.

Simsic (modified by Barrau) does not specifically teach squaring the values of a number of transform coefficients in the block to generate squared values; and summing the squared values to generate the prediction error energy for the block.

Johnson teaches squaring the values of a number of transform coefficients in the block to generate squared values; and summing the squared values to generate the prediction error energy for the block. [Pg. v-478 Col. 1 ¶ 2 - Col. 2 ¶ 1]

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Johnson with the device of Simsic allowing for maximized coding performance improving image quality.

19. As to claim 20, see discussion of claim 2 above.

20. Claims 3, 14-16 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Simsic et al. (Simsic) US 6,269,484 B1 in view of Barrau US 6,968,007 B2 further in view of Zeng US 7,203,234 B1.

21. As to claim 3, Simsic (modified by Barrau) teaches the limitations of claim 1.

Simsic (modified by Barrau) does not teach a de-quantization scale factor compared to a threshold.

Zeng teaches a de-quantization scale factor compared to a threshold. [Col. 3 lines 49-65]

It would have been obvious to one of ordinary skill in the art to incorporate the teachings of Zeng into the device of Simsic (modified by Barrau) reducing artifacts and improving video quality.

22. As to claim 21, see discussion of claim 3 above.

23. As to claim 14, Simsic teaches decoding a compressed video stream to output a decoded video stream, wherein the decoding extracts at least one decode parameter, [Abstract; Figs. 1-7; Fig. 9; Col 4 lines 29-50; Col. 5 lines 18-28; Col. 6 lines 1-20; Col. 6 line 56 - Col. 7 line 21; Col. 7 lines 37-49]

Simsic does not specifically teach a prediction error energy being compared to a threshold.

Barrau teaches prediction error energy compared to a threshold. [Abstract; Fig. 2; Col. 7 lines 25-44; Col. 8 lines 36-41; Col. 9 Lines 30-40; it would have been obvious to one skilled in the art the switch could be applied in a different configuration for modifying coding of video]

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the prediction error energy comparison to threshold teachings into the device of Simsic improving coding video quality.

Simsic (modified by Barrau) does not teach a de-quantization scale factor compared to a threshold.

Zeng teaches a de-quantization scale factor compared to a threshold. [Col. 3 lines 49-65]

It would have been obvious to one of ordinary skill in the art to incorporate the teachings of Zeng into the device of Simsic (modified by Barrau) reducing artifacts and improving video quality.

24. As to claim 15, Simsic (modified by Barrau and Zeng) teaches at least one decode parameter comprises a motion estimation vector. [Simsic – Abstract; Figs. 1-4; Col. 6 lines 56-65; Col. 4 lines 38-51]

25. As to claim 16, Simsic (modified by Barrau and Zeng) generating the prediction error energy of the block. [Simsic – Col. 8 line 34-58; Col. 9 line 4-15]

26. Claims 7-12, and 26-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Simsic et al. (Simsic) US 6,269,484 B1 in view of Barrau US 6,968,007 B2 in view of Zeng US 7,203,234 B1further in view of Beattie US 2001/0002205 A1.

27. As to claim 7, Simsic teaches detinterlacing a block of a frame of video based on a vertical interpolation, if the block of the frame of the video is intra coded; [Col. 3 lines 6-14; Abstract; Fig. 5] deinterlacing the block of the frame of the video with a motion compensation vector that is derived from decoding the block of the frame of the video. [Abstract; Figs. 1-7; Fig. 9; Col 4 lines 29-37; Col. 5 lines 18-28; Col. 6 lines 1-20; Col. 6 line 56 - Col. 7 line 21; Col. 7 lines 37-49]

Simsic does not specifically teach a prediction error energy being compared to a threshold; a de-quantization scale factor compared to a threshold; or generation of an updated motion compensation vector.

Barrau teaches prediction error energy compared to a threshold. [Abstract; Fig. 2; Col. 7 lines 25-44; Col. 8 lines 36-41; Col. 9 Lines 30-40; it would have been obvious to one skilled in the art the switch could be applied in a different configuration for modifying coding of video]

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the prediction error energy comparison to threshold teachings into the device of Simsic improving coding video quality.

Simsic (modified by Barrau) does not specifically teach a de-quantization scale factor compared to a threshold.

Zeng teaches a de-quantization scale factor compared to a threshold. [Col. 3 lines 49-65]

It would have been obvious to one of ordinary skill in the art to incorporate the teachings of Zeng into the device of Simsic (modified by Barrau) reducing artifacts and improving video quality.

Simsic (modified by Barrau and Zeng) does not specifically teach generation of an updated motion compensation vector.

Beattie teaches generation of an updated motion compensation vector. [¶ 0023; Figs. 2-3]

It would have been obvious to one of ordinary skill in the art to combine the teachings of Beattie into the device of Simsic (modified by Barrau and Zeng) optimizing performance of video motion and improving video quality.

28. As to claim 8, Simsic (modified by Barrau, Zeng, and Beattie) teaches performing motion estimation on the block of the video [Simsic - Abstract; Figs. 1-7; Fig. 9; Col 4 lines 29-37; Col. 5 lines 18-28; Col. 6 lines 1-20; Col. 6 line 56 - Col. 7 line 21; Col. 7 lines 37-49] to generate the updated motion vector using the motion compensation vector as an initial candidate motion vector. [Beattie - ¶ 0023; Figs. 2-3]

29. As to claim 9, Simsic (modified by Barrau, Zeng, and Beattie) teaches decoding the frame of the video. [Simsic - Abstract; Figs. 1-7; Fig. 9; Col 4 lines 29-37; Col. 5 lines 18-28; Col. 6 lines 1-20; Col. 6 line 56 - Col. 7 line 21; Col. 7 lines 37-49]

30. As to claim 10, Simsic (modified by Barrau, Zeng, and Beattie) teaches dequantizing a compressed bitstream that includes the frame of the video to generate a number of transform coefficients based on the de-quantizing scale factor; and performing an inverse transform

operation on the number of transform coefficients to generate a number of pixels representative of the frame of the video. [Barrau – Fig. 1; Figs. 3-6; Col. 3 lines 40-66]

31. As to claim 11, Simsic (modified by Barrau, Zeng, and Beattie) teaches decoding the frame of the video further comprises performing motion compensation for a block in the frame of the video if the block is not intra coded and has been encoded using motion compensation. [Simsic - Abstract; Figs. 1-7; Fig. 9; Col 4 lines 29-37; Col. 5 lines 18-28; Col. 6 lines 1-20; Col. 6 line 56 - Col. 7 line 21; Col. 7 lines 37-49]

32. As to claim 12, Simsic (modified by Barrau, Zeng, and Beattie) teaches generating the prediction error energy of the block. [Beattie - ¶ 0002; Simsic – Col. 8 line 34-58; Col. 9 line 4-15]

33. As to claim 26, Simsic teaches a deinterlacer to deinterlace a block of a frame of video with a motion compensation vector that is derived from a decode operation performed on the frame of the video [Abstract; Figs. 1-7; Col. 4 lines 29-50] and a display to display the deinterlaced frame of the video. [Figs. 1-4; Abstract; Col. 4 lines 52-59; Col. 5 lines 12-28]

Simsic does not specifically teach a prediction error energy being compared to a threshold or a random access memory to store the deinterlaced frame of the video.

Barrau teaches prediction error energy compared to a threshold [Abstract; Fig. 2; Col. 7 lines 25-44; Col. 8 lines 36-41; Col. 9 Lines 30-40; it would have been obvious to one skilled in the art the switch could be applied in a different configuration for modifying coding of video]

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the prediction error energy comparison to threshold teachings into the device of Simsic improving coding video quality.

Beattie teaches a random access memory to store video. [Figs. 2-3 (28)]

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Beattie with the device of Simsic (modified by Barrau) improving coding efficiency and video display.

34. As to claim 27. Simsic (modified by Barrau and Beattie) teach the display is a progressive screen display. [Figs. 1-4; Abstract; Col. 4 lines 52-59; Col. 5 lines 12-28]

35. Claim 28 is rejected under 35 U.S.C. 103(a) as being unpatentable over Simsic et al. (Simsic) US 6,269,484 B1 in view of Barrau US 6,968,007 B2 in view of Beattie US 2001/0002205 A1 further in view of Zeng US 7,203,234 B1.

36. As to claim 28, Simsic (modified by Barrau and Beattie) teaches the limitations of claim 26.

Simsic (modified by Barrau and Beattie) does not teach a de-quantization scale factor compared to a threshold.

Zeng teaches a de-quantization scale factor compared to a threshold. [Col. 3 lines 49-65]

It would have been obvious to one of ordinary skill in the art to incorporate the teachings of Zeng into the device of Simsic (modified by Barrau and Beattie) reducing artifacts and improving video quality.

37. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Simsic et al. (Simsic) US 6,269,484 B1 in view of Barrau US 6,968,007 B2 in view of Beattie US 2001/0002205 A1 further in view of Johnson et al. (Johnson), Frequency Scalable Video Coding Using MDCT, IEEE, Pgs. V-477-V480, 1994.

38. As to claim 13, Simsic (modified by Barrau, Zeng, and Beattie) teaches the limitations of claim 12.

Simsic (modified by Barrau) does not specifically teach squaring the values of a number of transform coefficients in the block to generate squared values; and summing the squared values to generate the prediction error energy for the block.

Johnson teaches squaring the values of a number of transform coefficients in the block to generate squared values; and summing the squared values to generate the prediction error energy for the block. [Pg. v-478 Col. 1 ¶ 2 - Col. 2 ¶ 1]

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Johnson with the device of Simsic allowing for maximized coding performance improving image quality.

39. As to claim 29, Simsic (modified by Barrau and Beattie) teaches the limitations of claim 26.

Simsic (modified by Barrau and Beattie) does not specifically teach the prediction error energy comprises a Discrete Cosine Transform energy for the block.

Johnson teaches the prediction error energy comprises a Discrete Cosine Transform energy for the block. [Johnson - Pg. v-478 Col. 1 ¶ 2 - Col. 2 ¶ 1]

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Johnson with the device of Simsic (modified by Barrau and Beattie) allowing for maximized coding performance improving image quality.

40. Claims 14-17, and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Simsic et al. (Simsic) US 6,269,484 B1 in view of Zeng US 7,203,234 B1 and further in view of

Johnson et al. (Johnson), Frequency Scalable Video Coding Using MDCT, IEEE, Pgs. V-477-V480, 1994.

41. As to claim 17, Simsic (modified by Barrau and Zeng) teaches the limitations of claim 16.

Simsic (modified by Barrau and Zeng) does not specifically teach squaring the values of a number of transform coefficients in the block to generate squared values; and summing the squared values to generate the prediction error energy for the block.

Johnson teaches squaring the values of a number of transform coefficients in the block to generate squared values; and summing the squared values to generate the prediction error energy for the block. [Pg. v-478 Col. 1 ¶ 2 - Col. 2 ¶ 1]

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Johnson with the device of Simsic (modified by Barrau and Zeng) allowing for maximized coding performance improving image quality.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anner Holder whose telephone number is 571-270-1549. The examiner can normally be reached on M-Th, M-F 8 am - 3 pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mehrdad Dastouri can be reached on 571-272-7418. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

ANH 02/01/08

TUNG VO
PRIMARY EXAMINER